gregory.miller@jhuapl.edu

HORIZONTAL FUSION

CATALYST FOR NET-CENTRIC TRANSFORMATION • DEPARTMENT OF DEFENSE

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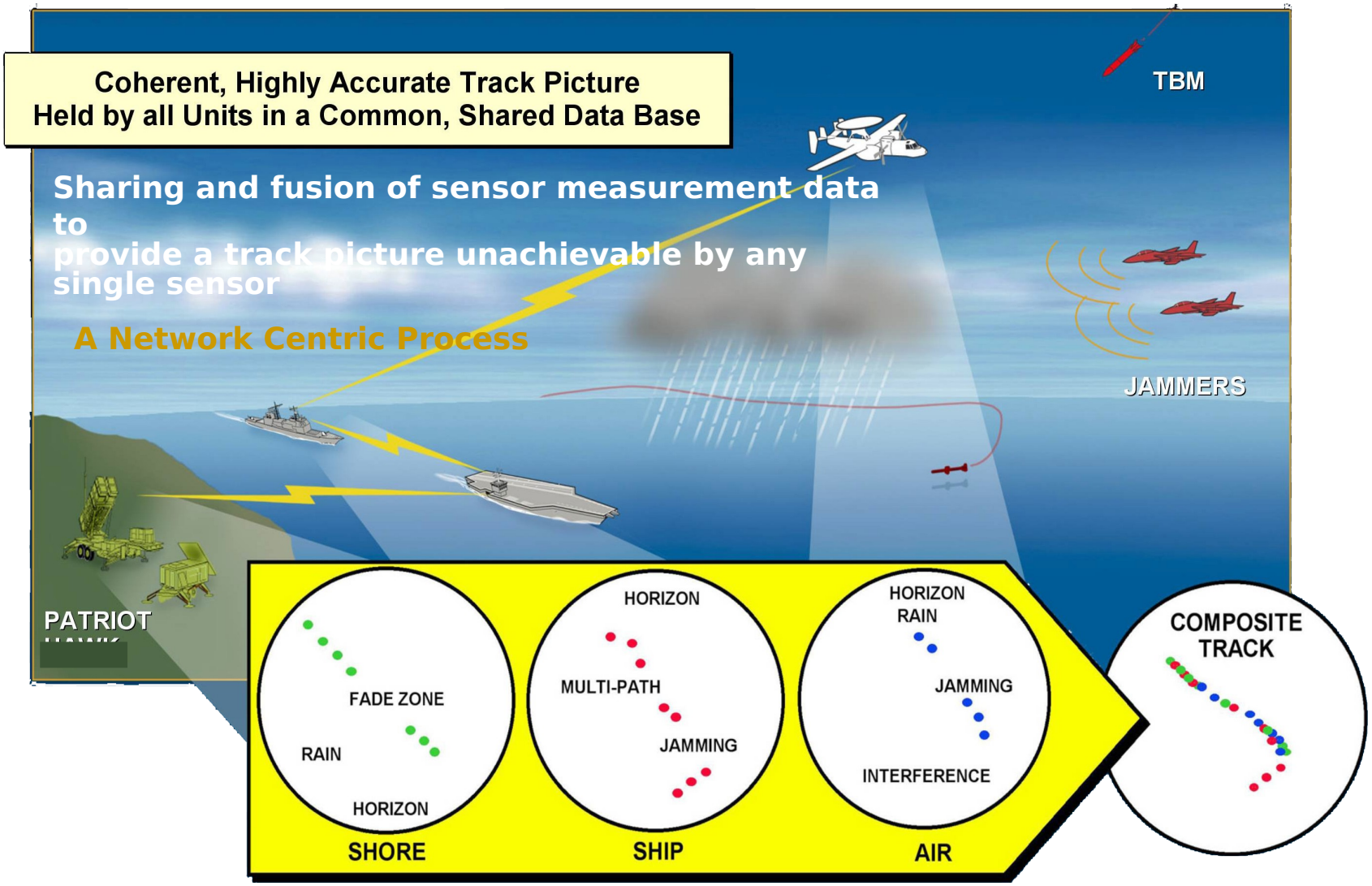
Sensor Networking Concept



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CEC is an Operational Capability in the U.S. Navy Today

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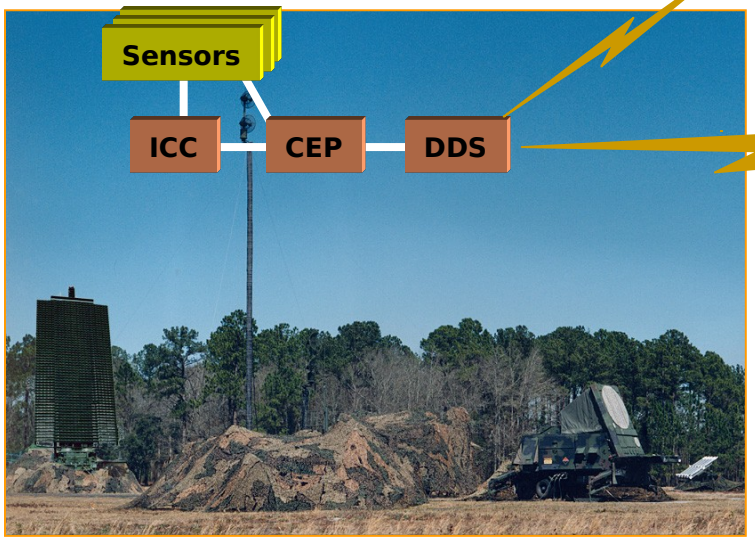
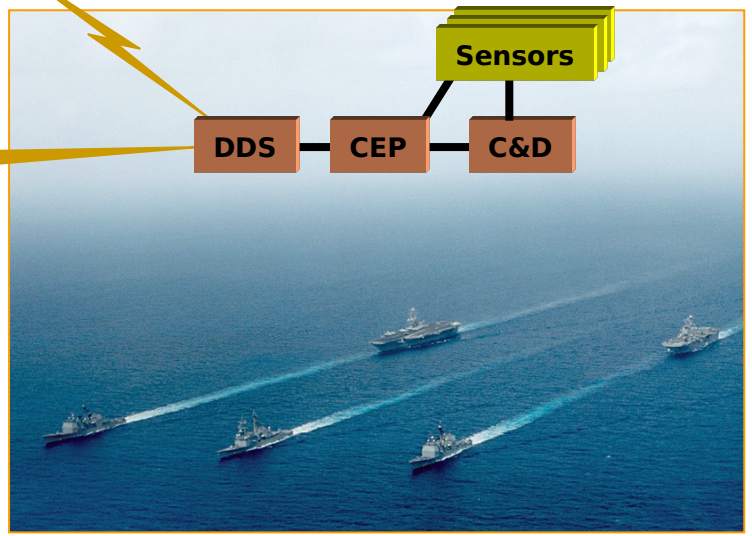
CEC System Elements
(Dedicated Communications & Processing)

DDS CEP MCU





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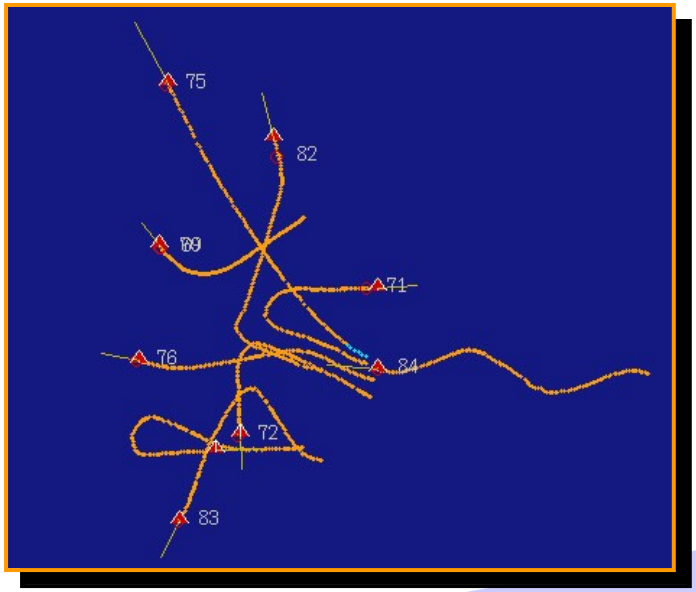
CEC Provides Clarity, Continuity, and Commonality of Air Picture



- **Proven technology with unparallel performance in generation of ai track picture**
  - **"….Ground Truth quality.."**
    [JCIET02 assessment report]
- **Why d… …ed to Transform to**

- **CEC is a Navy only system.**
- **How do we get this information to all Joint warfighters**
- **How do we integrate additional sensors/platforms to provide greater coverage ?**
- **Significant potential warfighter gain through the integra Joint sensors and systems**

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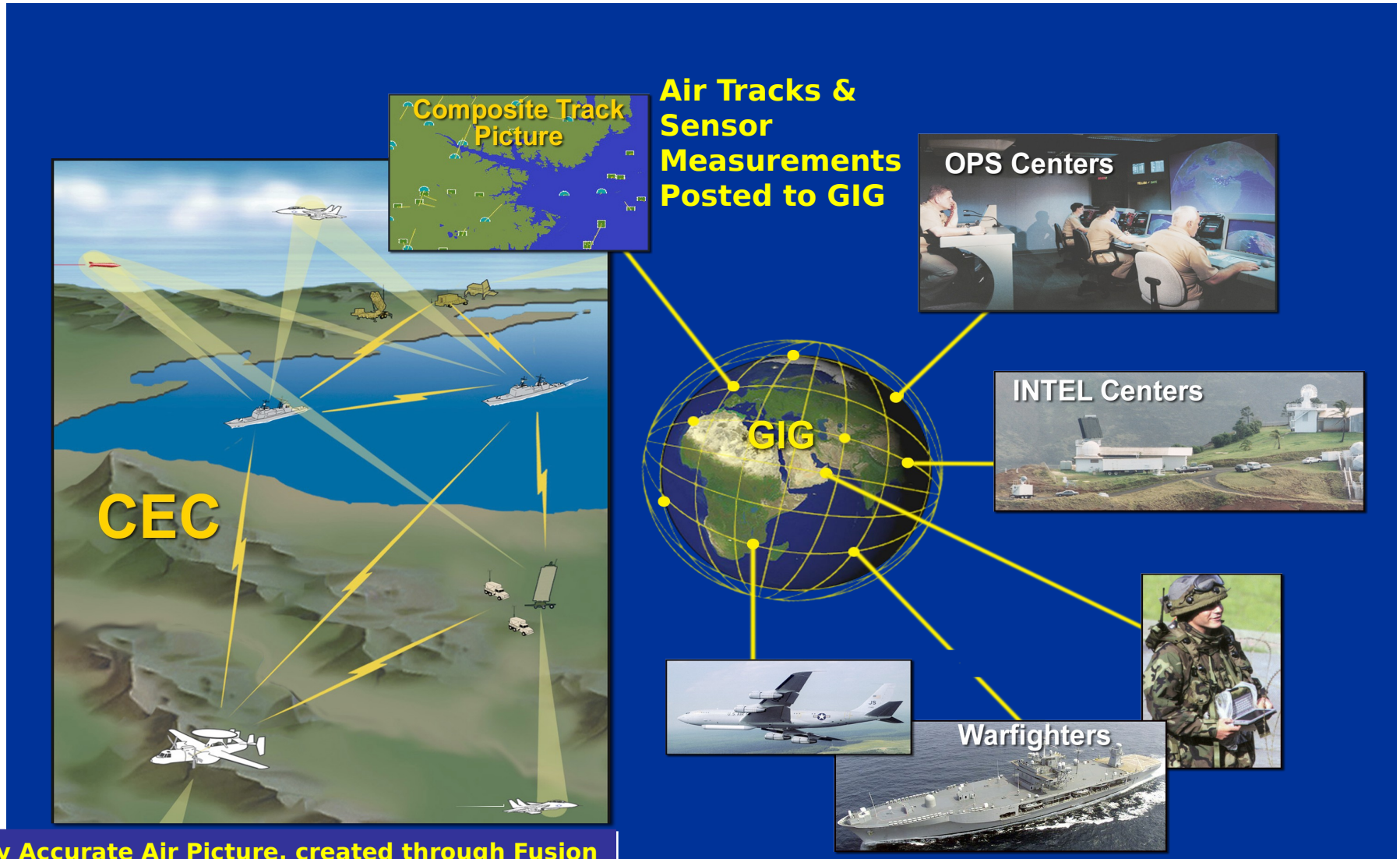
GIG Enabled CEC


Composite Track Picture
Air Tracks & Sensor Measurements Posted to GIG
OPS Centers
CEC
GIG
INTEL Centers
Warfighters
Highly Accurate Air Picture, created through Fusion of Data from Multiple Sensors on Multiple Platforms (ships, planes, land-based sites)

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How Does Net Centric Ops Help

- **Common data and networking standards open the information gates within a globally networked environment**

- **Global discovery and access to information that is currently inaccessible, or very difficult/costly to access.**
  - **CEC data is now globally available**
  - **CEC can access sensor and platform data from units previously inaccessible**

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Net-Centric Challenges

- **Sensor networking represents unique requirements for the exchange of near real-time & real-time sensor & track data.**
  - **Latency (second to sub-second latencies)**
  - **Bandwidth**
  - **Data reliability**
  - **Continuous streaming data to multiple users based on user needs**

- **Key Technology Focus Areas**
  - **"Web" Services - Meta data Tagging (XML Schema & Standards)**
  - **Information Assurance - Registration & Discovery Services**

- **Challenges**
  - **Operation on Limited BW Nets, growth toward higher BW nets (e.g. TC,GIG-BE)**
    - **Meta-tagging & Web service overhead**
    - **Compression techniques & technologies**
  - **Operating with available net QOS for evolutionary capabilities**
    - **Situational awareness Remote Sensor Integration**
    - **Composite Tracking Fire Control Support**
  - **Security**
  - **Providing appropriate data based on user needs**

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HF is an Opportunity

- **Net-Centric operations for CEC will not come overnight nor will it come without significant challenge**

- **HF is providing the opportunity to tackle many of the challenges**

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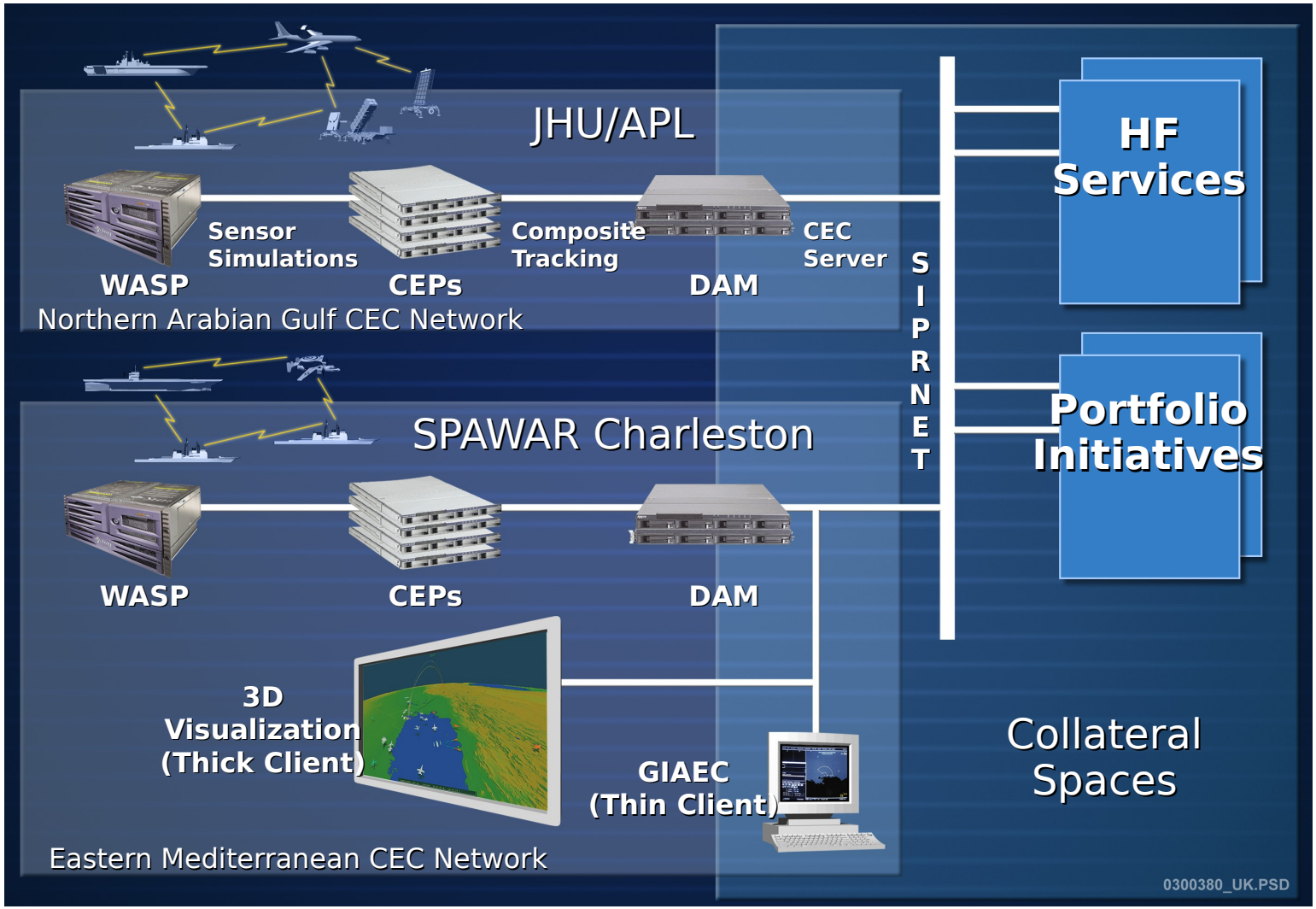
CEC-HF: QL-1 Demonstration Capabilities



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CEC-HF Leading the Way for Integrating Sensor Networks in to GIG

- Identify data to be made accessible to GIG
- Defining meta data schema (XML)
- Explore/identify Web enabling technologies & approaches
- Explore options for implementing composite tracking over the GIG
- Prototype & demonstrate GIG enabled capabilities

Establish the Way Forward for Integrating Sensor Networking into the GIG

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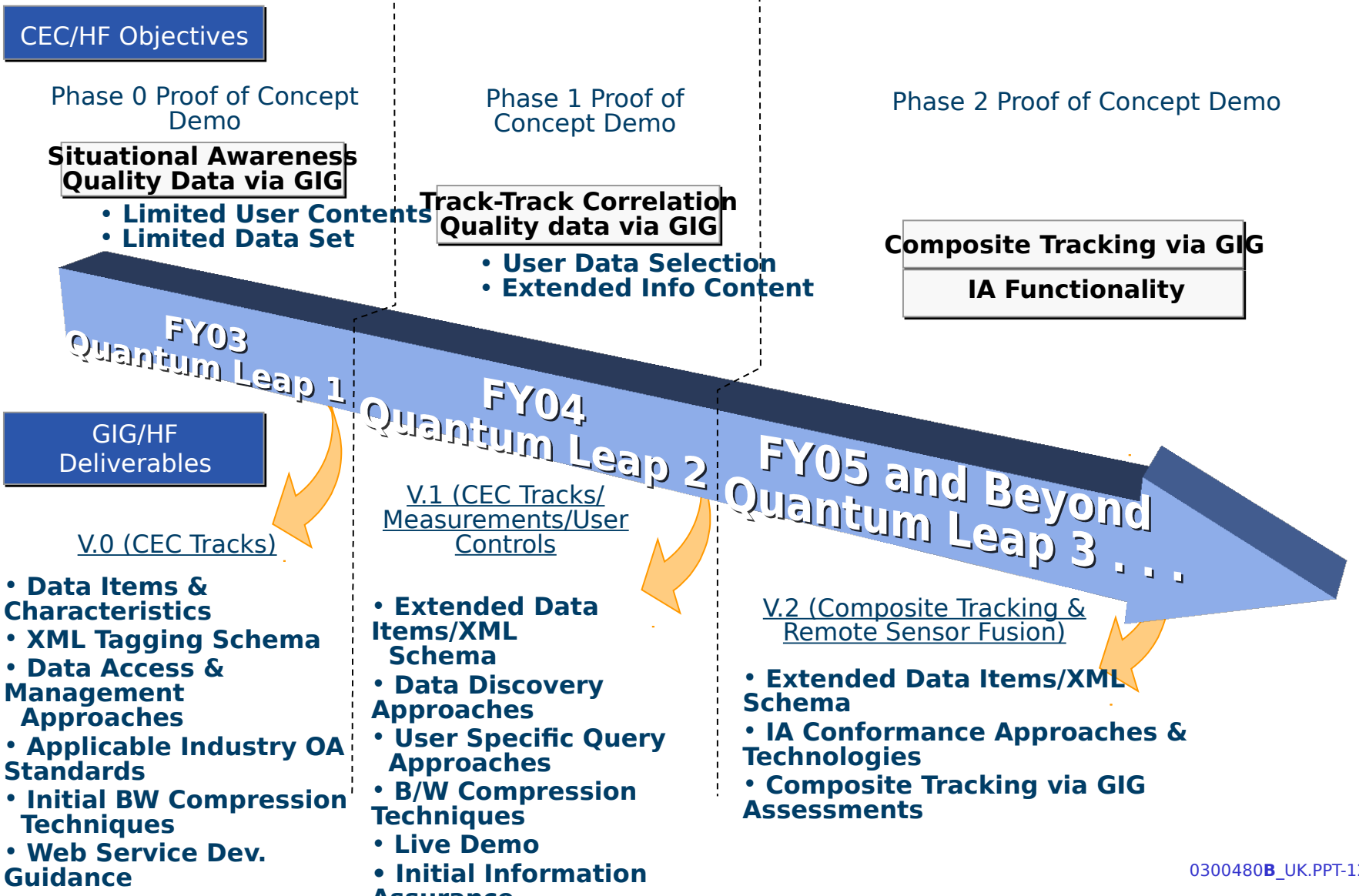
CEC HF Way Ahead


CEC/HF Objectives
Phase 0 Proof of Concept Demo
Situational Awareness Quality Data via GIG
• Limited User Contents
• Limited Data Set
Phase 1 Proof of Concept Demo
Track-Track Correlation Quality data via GIG
• User Data Selection
• Extended Info Content
Phase 2 Proof of Concept Demo
Composite Tracking via GIG
IA Functionality
FY03 Quantum Leap 1
FY04 Quantum Leap 2
FY05 and Beyond Quantum Leap 3 . . .
GIG/HF Deliverables
V.0 (CEC Tracks)
• Data Items & Characteristics
• XML Tagging Schema
• Data Access & Management Approaches
• Applicable Industry OA Standards
• Initial BW Compression Techniques
• Web Service Dev. Guidance
V.1 (CEC Tracks/ Measurements/User Controls
• Extended Data Items/XML Schema
• Data Discovery Approaches
• User Specific Query Approaches
• B/W Compression Techniques
• Live Demo
• Initial Information
V.2 (Composite Tracking & Remote Sensor Fusion)
• Extended Data Items/XML Schema
• IA Conformance Approaches & Technologies
• Composite Tracking via GIG Assessments

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Working in the Portfolio Environment

- HF portfolio management does not give us the answers
- Initiatives are the technology leaders - seeking answers
- Initiatives work together to define strong standards on which Net Centric Ops can grow
- The total solution does not come overnight
  - We are solving what we can now
- Change is expected and embraced
  - Standards are evolving and everything does not work the first time
- The warfighter is our top priority
  - If the product does not help them, its useless.